

**COMPREHENSIVE VALIDATION PACKAGE**

ATL Applications

INVENTORY SHEET

WORK ORDER # 0912276

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Completed by:

Kara McKiernan  
(Signature)

Kara McKiernan/ Document Control  
(Print Name & Title)

01/04/10  
(Date)

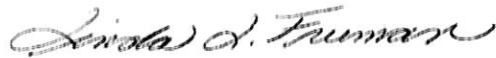
**WORK ORDER #: 0912276**

**Work Order Summary**

<b>CLIENT:</b>	Mr. Taeko Minegishi Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494	<b>BILL TO:</b>	Accounts Payable Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494
<b>PHONE:</b>	800-825-5343	<b>P.O. #</b>	16512
<b>FAX:</b>	781-247-4305	<b>PROJECT #</b>	16512
<b>DATE RECEIVED:</b>	12/11/2009	<b>CONTACT:</b>	Ausha Scott
<b>DATE COMPLETED:</b>	12/29/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	106129	ATL Applications
02A	106130	ATL Applications
03A	106131	ATL Applications
04A	106132	ATL Applications
04AA	106132 Lab Duplicate	ATL Applications
05A	106133	ATL Applications
06A	106134	ATL Applications
07A	106135	ATL Applications
08A	106136	ATL Applications
09A	106145	ATL Applications
10A	Lab Blank	ATL Applications
10B	Lab Blank	ATL Applications
11A	CCV	ATL Applications

CERTIFIED BY:



Laboratory Director

DATE: 12/31/09

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180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630  
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE**  
**ATL GC Application**  
**Environmental Health & Engineering, Inc.**  
**Workorder# 0912276**

Nine Radiello 170 (H<sub>2</sub>S) samples were received on December 11, 2009. The procedure involves adsorption of H<sub>2</sub>S by zinc acetate to form zinc sulfide. The sulfide is then recovered by extraction with water and addition of ferric chloride in a strongly acidic solution to produce methylene blue. Methylene blue absorbance is then measured at 665 nm using a spectrophotometer. Results are reported in uG and uG/m<sup>3</sup>.

Sampling rate of 69 mL/min for H<sub>2</sub>S was provided by the manufacturer.

**Receiving Notes**

There were no receiving discrepancies.

**Analytical Notes**

Results were calculated based on 25 deg C without temperature correction. The actual exposure time was used to calculate sample concentrations and reporting limits.

An exposure time of 18720 minutes was used for the QC samples.

All media used for the sampling were supplied by the client. Blank subtraction was not performed on the sample results since the media used for Method Blanks may be from a different lot than the media used for the samples.

**Definition of Data Qualifying Flags**

Eight qualifiers may have been used on the data analysis sheets and indicate as follows:

- B - Compound present in laboratory blank greater than reporting limit.
- J - Estimated value.
- E - Exceeds instrument calibration range.
- S - Saturated peak.
- Q - Exceeds quality control limits.
- U - Compound analyzed for but not detected above the detection limit.
- M - Reported value may be biased due to apparent matrix interferences.
- N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue

## **Sample Results and Raw Data**

# AIR TOXICS LTD.

ATL Application # 59 for RAD 170 (Hydrogen Sulfide)

Spectrophotometer

Field Sample I.D.	Lab Sample I.D.	Collection Date	Analysis Date	Dilution Factor	Reporting Limit (ug)	Reporting Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
106129	0912276-01A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106130	0912276-02A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106131	0912276-03A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106132	0912276-04A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106132 Lab Duplicate	0912276-04AA	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106133	0912276-05A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106134	0912276-06A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106135	0912276-07A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106136	0912276-08A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
106145	0912276-09A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
Method Blank	0912276-10A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
Method Blank	0912276-11A	NA	12/21/2009	1.00	0.80	0.58	ND	ND
CCV	0912276-12A	NA	12/21/2009	1.00	0.80	0.58	%Rec 103	

COMMENTS: 1. NA=Not Applicable

2. ND=Not Detected

3. Exposure time of 18720 minutes was assumed for the QC samples.

4. Background subtraction not performed.

# Hydrogen Sulfide Radiello Calculation Worksheet

Workorder #: 0912276

Sampling Rate (µg/ppb.min) 0.096 Typically 0.096 for H2S

Sampling T (deg C) 25 Typically 25

Volume (ml) 10.5 Typically 10.5 for H2S

Date of Analysis: 12/21/2009

Corrected Q 0.096 Takes into account Temp

Q includes conversion from Sulfide to H2S

Conc (µg) x 1000  
Q x Duration

ppb x mw  
24.45

(Abs-X-Int)xDF  
Slope

Conc(µg/ml) x Vol (mL)

conc (µg sulfide) \* MW H2S  
MW Sulfide

LabSampleID	Client	Date of Collection	Abs	Duration (min)	DF	Conc (µg/ml) of sulfide	Conc (µg) of sulfide	Conc (µg) of H2S	T Corrected, no Blank correction Conc (ppb) of H2S	Conc (µg/m3) of H2S
01A	106129	NA	0.043	18720	1.00	0.015097688	0.158525723	0.168471272	0.088	0.123
02A	106130	NA	0.050	18720	1.00	0.021867341	0.229607077	0.244012111	0.128	0.176
03A	106131	NA	0.021	18720	1.00	-0.006178364	-0.064872819	-0.068942794	-0.036	-0.050
04A	106132	NA	0.031	18720	1.00	0.003492569	0.036671973	0.03897269	0.020	0.028
04AA	106132 Lab Duplicate	NA	0.027	18720	1.00	-0.000375804	-0.003945944	-0.004193503	-0.002	-0.003
05A	106133	NA	0.065	18720	1.00	0.03637374	0.381924265	0.405885338	0.213	0.286
06A	106134	NA	0.058	18720	1.00	0.029604087	0.310842911	0.330344499	0.173	0.241
07A	106135	NA	0.031	18720	1.00	0.003492569	0.036671973	0.03897269	0.020	0.028
08A	106136	NA	0.031	18720	1.00	0.003492569	0.036671973	0.03897269	0.020	0.028
09A	106145	NA	0.027	18720	1.00	-0.000375804	-0.003945944	-0.004193503	-0.002	-0.003
10A	Method Blank	NA	0.038	18720	1.00	0.010262222	0.107753327	0.11451353	0.060	0.084
11A	Method Blank	NA	0.028	18720	1.00	0.000591289	0.006208535	0.006598045	0.003	0.005
12A	CCV	NA	0.332	18720	1.00	0.294587639	3.093170206	3.28722878	1.721	2.399

QC Duration  
18720

CCV Spike Amt  
0.296

Low Point	DF	RL (ug/mL)	$\mu$ Vol (mL)
1	1	100	100
2	1	100	100
3	1	100	100
4	1	100	100
5	1	100	100
6	1	100	100
7	1	100	100
8	1	100	100
9	1	100	100
10	1	100	100
11	1	100	100
12	1	100	100
13	1	100	100
14	1	100	100
15	1	100	100
16	1	100	100
17	1	100	100
18	1	100	100
19	1	100	100
20	1	100	100
21	1	100	100
22	1	100	100
23	1	100	100
24	1	100	100
25	1	100	100
26	1	100	100
27	1	100	100
28	1	100	100
29	1	100	100
30	1	100	100
31	1	100	100
32	1	100	100
33	1	100	100
34	1	100	100
35	1	100	100
36	1	100	100
37	1	100	100
38	1	100	100
39	1	100	100
40	1	100	100
41	1	100	100
42	1	100	100
43	1	100	100
44	1	100	100
45	1	100	100
46	1	100	100
47	1	100	100
48	1	100	100
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57	1	100	100
58	1	100	100
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66	1	100	100
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68	1	100	100
69	1	100	100
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88	1	100	100
89	1	100	100
90	1	100	100
91	1	100	100
92	1	100	100
93	1	100	100
94	1	100	100
95	1	100	100
96	1	100	100
97	1	100	100
98	1	100	100
99	1	100	100
100	1	100	100

RL (urg sulfide) #MW H2S

**Q includes conversion from Sulfide to H<sub>2</sub>S**

$$\frac{RL(\mu g) \times 1000}{Q \times \text{Duration}}$$

**ppbx mw**  
**24.45**

### Calibration Data

**Calibration Date**  
**12/21/2009 Linear Regression**

Slope	1.034026444
Y-int	0.027388591
R2	0.996768375

RI (ug/ml) of sulfide	RI (ug) of sulfide	RI (ug) of H2S	RI (ppb) of H2S	RI (ug/m3)	Result (ug) H2S	Result (ug/m3) H2S	%Rec
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	ND	ND	
0.072	0.752	0.798966249	0.42	0.583	3.28722878	2.389235891	%Rec
0.072	0.752	0.798966249	0.42	0.583			103

ug/ml of sulfide	absorbance	Slope	Y-int	R2
0	0	1.034026444	0.027386591	0.996765375
0.0716	0.089			
0.143	0.168			
0.286	0.331			
0.572	0.643			
1.145	1.199			

## **QC Results and Raw Data**



## Spectrophotometer Logbook

@Air Toxics Ltd.

Logbook#: 1875

Work Order: 0912276

Date: 12/21/09

Method: Rad 170

Analyst: M. Skidmore

Wavelength: 665nm

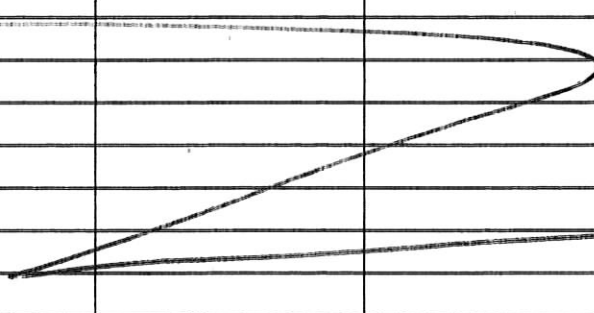
Standard ID	Concentration	ABS
Level 1 1925-2-E	0.0716 µg/mL	0.089
Level 2 -D	0.143 µg/mL	0.168
Level 3 -C	0.286 µg/mL	0.331
Level 4 -B	0.572 µg/mL	0.643
Level 5 -A	1.145 µg/mL	1.199
ICV 1925-4	0.286 µg/mL	0.300

$$r = 0.9988$$

$$m = 1.034$$

$$b = 0.02739$$

ICV % Recovery = 92

Fraction	Dilution	ABS	Sample ID	Sample Volume	Comments
01A	1.00	0.043	106129	10.5 mL	Lot: 09151
02A		0.050	106130		
03A		0.021	106131		
04A		0.031	106132		
04AA		0.027	106132		
05A		0.065	106133		
06A		0.058	106134		
07A		0.031	106135		
08A		0.031	106136		
09A		0.027	106145		
BLK		0.038	N/A		
BLK		0.028			
LCS		0.178			0.133 µg/mL
CW/End check		0.332			0.286 µg/mL
					

Procedure:

12/21/09

# Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-86

Project: Ferric Chloride Solution

Analyst: M. Skidmore

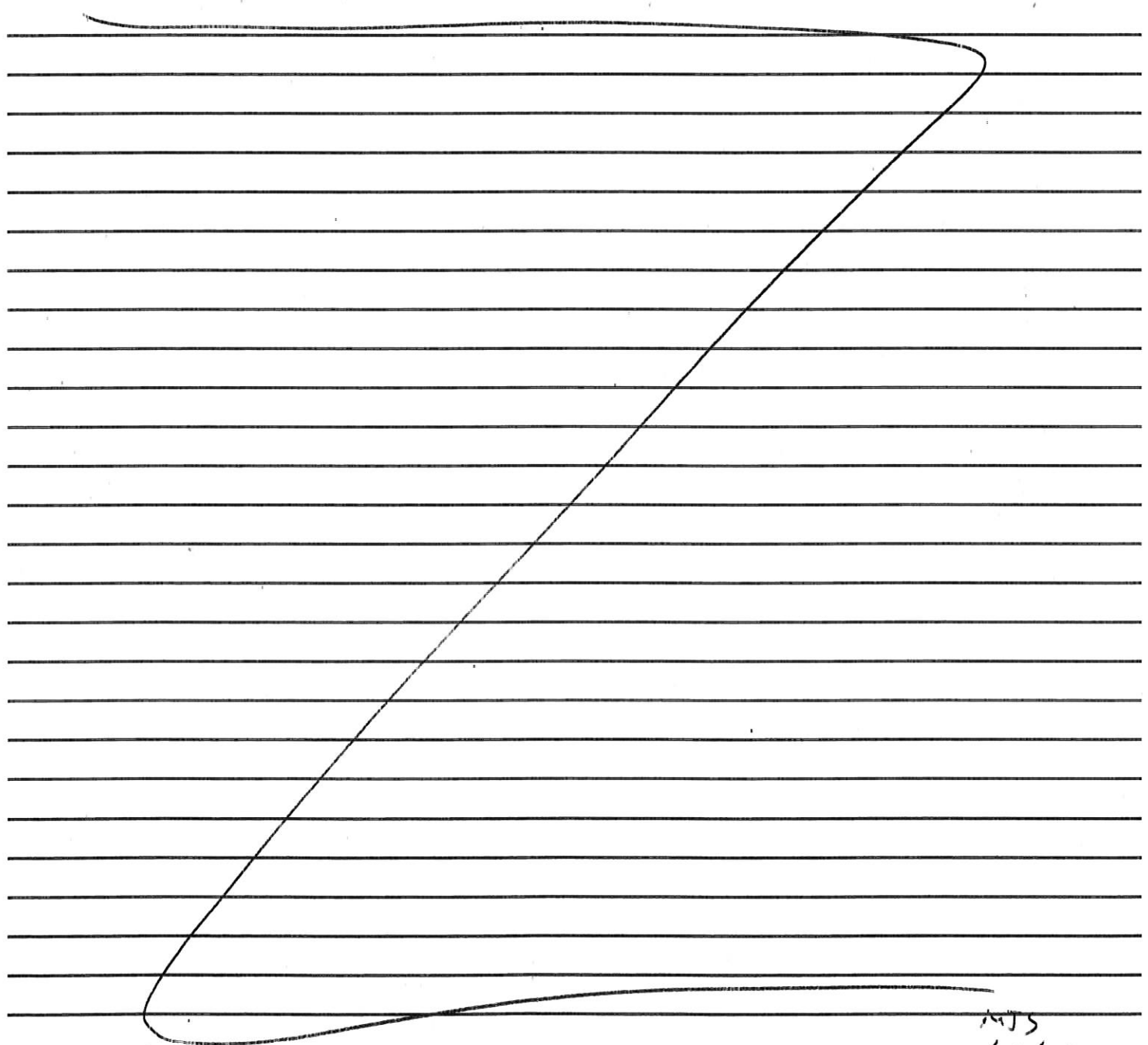
Preparation Date: 10/26/09

Expiration Date: 10/26/10

Solvent: D.I. H<sub>2</sub>O

Solvent Lot #: N/A

Procedure/Comments: Dissolve 25g of ferric Chloride hexahydrate  
(located in ER2C, lot: 73297 MJ) in 10 mL of D.I  
H<sub>2</sub>O.



## Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858

Standard ID: 1858-93

Project: Rad 170 Amine Solution

Analyst: M. Skidmore

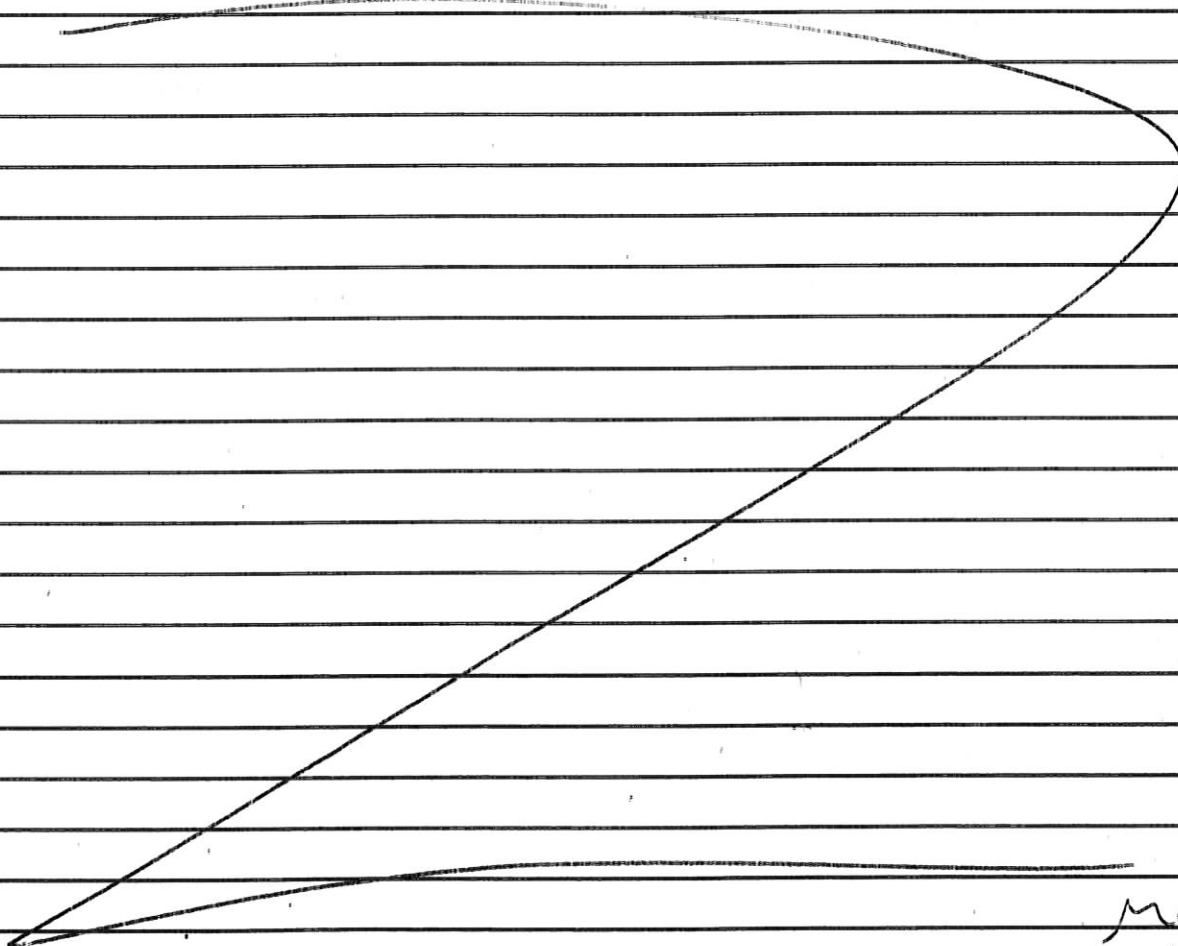
Preparation Date: 12/9/09

Expiration Date: 1/9/10

Solvent: D.I. H<sub>2</sub>O

Solvent Lot #: N/A

Procedure/Comments:

Sulfuric acid MJS  
12/9/09Sulfuric Acid Solution:Slowly add 6.25 mL of concentrated sulfuric acid to 2.5 mL of D.I. H<sub>2</sub>O, and let the solution cool. (sulfuric acid lot: 9339 G.T.J.).Amine Solution:Dissolve 1.6875g of N,N-dimethyl-p-phenyldiammonium oxalate (located in ER1A; Lot: 63797PJ) in the above mentioned sulfuric acid solution. Dilute this solution to 250 mL with sulfuric acid-water 1:1 v/v. (This is roughly 120 mL H<sub>2</sub>O + 120 mL sulfuric acid). MJS  
12/9/09MJS  
12/9/09

# Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1925

Standard ID: 1925-1

Project: Ferric chloride - Amine Solution Read 170

Analyst: M. Skidmore

Preparation Date: 12/21/09

Expiration Date: 12/21/09

Solvent: D.I. H<sub>2</sub>O

Solvent Lot #: N/A

Procedure/Comments: 3.0 mL of ferric chloride solution  
(1858-86) was added to 15 mL of amine solution  
(1858-93).

MJS  
12/21/09

Standard ID: 1925-2Project: Rad 170 calibrationAnalyst: M. SkidmorePreparation Date: 12/21/09Expiration Date: 12/21/09Solvent: D.I. H<sub>2</sub>OSolvent Lot #: N/A

## Procedure/Comments:

Solution A: 2 mL of Code Rad 171 (1476-984, exp 8/6/10) (located in ER1B) with  
98 mL of D.I. H<sub>2</sub>O = 1.145 µg/mL

Solution B: 2.5 mL of Solution A with 2.5 mL of D.I. H<sub>2</sub>O = 0.572 µg/mL

Solution C: 1.25 mL of Solution A with 3.75 mL of D.I. H<sub>2</sub>O = 0.286 µg/mL

Solution D: 0.625 mL of Solution A with 4.375 mL of D.I. H<sub>2</sub>O = 0.143 µg/mL

Solution E: 0.375 mL of Solution A with 5.625 mL of D.I. H<sub>2</sub>O = 0.0716 µg/mL

Note: Each solution was measured immediately after it was prepared. Solution A is only  
stable in the flask it was prepared in.

## Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1925

Standard ID: 1925-3  
Project: H<sub>2</sub>S LCS Rad 170  
Analyst: M. Skidmore  
Preparation Date: 12/21/09  
Expiration Date: 12/21/09

Solvent: D.I. H<sub>2</sub>O  
Solvent Lot #: N/A

Procedure/Comments: \_\_\_\_\_

\_\_\_\_\_ A Rad 170 cartridge (lot: 09151 ) was placed in a 40 mL VOA vial. 10.0 mL of D.I.  
\_\_\_\_\_ H<sub>2</sub>O was aliquoted into the vial. 1.0 mL of H<sub>2</sub>S gas (1476-835, 1000 ppm) was injected  
\_\_\_\_\_ into the vial, into the H<sub>2</sub>O. The solution was allowed to gently shake for 2 hours. Then  
\_\_\_\_\_ 0.5 of the ferric-chloride-amine (1925-1 ) was added to the vial and capped  
\_\_\_\_\_ immediately. The solution was allowed to sit for 30 minutes and the absorbance was  
\_\_\_\_\_ measured at 665 nm.

12/21/09

MTS  
12/21/09

# Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1925

Standard ID: 1925-4

Project: H<sub>2</sub>S ICV Rad 170

Analyst: Casey Leaf

Preparation Date: 12/21/09

Expiration Date: 12/21/09

Solvent: DI H<sub>2</sub>O

Solvent Lot #: N/A

Procedure/Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
Solution A: 2 mL of Code Rad 171 (1476-984, exp 8/6/10) (located in ER1B) with  
98 mL of D.I. H<sub>2</sub>O = 1.145 µg/mL

\_\_\_\_\_  
\_\_\_\_\_  
Solution C: 1.25 mL of Solution A with 3.75 mL of D.I. H<sub>2</sub>O = 0.286 µg/mL

\_\_\_\_\_  
\_\_\_\_\_  
Note: Each solution was measured immediately after it was prepared. Solution A is only  
stable in the flask it was prepared in.

Case  
12/21/09

Case 12/21/09

Casey Leaf  
Signed

12/21/09  
Date

Phil L...  
Reviewed

12/21/09  
Date

## **Shipping/ Receiving Documents**



**180 Blue Ravine Road, Suite B  
Folsom, CA 95630**

**Phone (916) 985-1000 FAX (916) 985-1020  
Hours 8:00 A.M. to 6:00 P.M. Pacific**

COMPANY: Environmental Health & Engineering, Inc.  
ATTENTION: Mr. Taeko Minegishi  
FAX #: 781-247-4305  
FROM: Sample Receiving  
Workorder #: 0912276  
# of pages (Including Cover): 4

1/4/2010

Thank you for selecting Air Toxics Ltd. We have received your samples and have found discrepancies. In order to expedite analysis and reporting, please review the attached information for accuracy.

Corrections can be faxed to **Ausha Scott at 916-985-1020.**

ATL will proceed with the analysis as specified on the Chain of Custody and Sample Login page.

In accordance with your company's contract, this account is required to have a PO that is fully executed by both parties which also covers the cost of the workorder before any data can be released. Please ensure that you have given all appropriate information to our Project Manager so that there will be no delay in reporting of the data you are requesting.

*Your prompt response is appreciated.*

DATE: 12/9/09

FROM: Environmental Health and Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494-2725 09129

TO: Air Toxics

**Please send invoices to ATTN: Accounts Payable**  
**Please send reports to ATTN: Data Coordinator**

In all correspondence regarding this matter, please refer to EH&E Project # 16512

The cost of this analysis will be covered by EH&E Purchase Order # 16512

For EH & E Data Coordinator - URGENT DATA ☐

[illegible]

**Special instructions:**

- ☒ Standard turn around time      ☐ Rush by \_\_\_\_\_ date/time      ☐ Other \_\_\_\_\_  
☐ Fax results 781-247-4305  
☐ **RETURN SAMPLES**      ☒ Electronic transfer - datacoordinator@ehelinc.com  
☒ Additional report recipient bbaker@ehelinc.com

**Each signatory please return one copy of this form to the above address**

Relinquished by: Tuan Truong of Environmental Health & Engineering, Inc. Date: 12/9/09

Received by: Monica Green or (company name) ATL 12/1/09 Date: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ of (company name) \_\_\_\_\_ Date: \_\_\_\_\_

Received by: \_\_\_\_\_ of (company name) **CUSTODY SEAL INTACT?** ☐ **Date:** \_\_\_\_\_

Relinquished by: \_\_\_\_\_ of (company name) Y N NON TEMP AAA Date: me

Received by: \_\_\_\_\_ of (company name) Fed Ex 6C Date: \_\_\_\_\_

Received by: \_\_\_\_\_ of Environmental Health & Engineering, Inc. Date: \_\_\_\_\_

Page 1 of 1

## SAMPLE RECEIPT SUMMARY

**WORKORDER 0912276**

**Client**

Mr. Taeko Minegishi  
Environmental Health &  
Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494

**Phone**

800-825-5343

**Fax**

781-247-4305

**Date Promised:** 12/28/09 11:59 pm

**Date Completed:** 12/31/09

**Date Received:** 12/11/09

**PO#:** 16512

**Project#:** 16512

**Sales Rep:** TL

**Total \$:** \$ 495.00

**Logged By:** MW

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
01A	106129	ATL Applications	NA	\$50.00
02A	106130	ATL Applications	NA	\$50.00
03A	106131	ATL Applications	NA	\$50.00
04A	106132	ATL Applications	NA	\$50.00
04AA	106132 Lab Duplicate	ATL Applications	NA	\$0.00
05A	106133	ATL Applications	NA	\$50.00
06A	106134	ATL Applications	NA	\$50.00
07A	106135	ATL Applications	NA	\$50.00
08A	106136	ATL Applications	NA	\$50.00
09A	106145	ATL Applications	NA	\$50.00
10A	Lab Blank	ATL Applications	NA	\$0.00
10B	Lab Blank	ATL Applications	NA	\$0.00
11A	CCV	ATL Applications	NA	\$0.00
Misc. Charges eCVP (9) @ \$5.00 each.				\$45.00

**Note:** Samples received after 3 P.M. PST are considered to be received on the following work day.  
Atlas Project Name/Profile#: CPSC Indoor Air Monitoring/13297

**BILL TO:** Accounts Payable  
Environmental Health & Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494

Analysis Code: Other GC

**TERMS:**

Reporting Method: ATL Application #59 H2S-Radiello 170

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630  
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

## **Other Records**

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**Method : ATL Application #59 H2S-Radiello 170**

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<b>CAS Number</b>	<b>Compound</b>	<b>Rpt. Limit (ug)</b>
7783-06-4	Hydrogen Sulfide	1.2

## DATA REVIEW CHECKLIST

Work Order #:

0912276

A <sub>1</sub>	A <sub>2</sub>	R	T	M	Q
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Analysis/Reporting vs. Project Profile/SOP requirements checked (i.e. 100% Dups, J-Flag to MDL, etc)  
 The final report has the correct reporting list, special units, and header info.  
 Lab Narrative is correct (proper method & description/Receiving & Analytical notes correct)  
 Sample Discrepancy Report (SDR) is completed

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Corrective Action issued - # \_\_\_\_\_  
 Unusual circumstances have been documented in the notes section below

LUMEN validation report present and initialed

CIRCLE (YES (NO))

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lab Blank, CCV, LCS and DUP met QC criteria
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hold time is met for all samples
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Appropriate data qualifier flags are applied
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Manual integrations for samples and QC are properly documented
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Samples analyzed within the project or method specific clock
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Retention times have been verified
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Appropriate ICAL(s) included
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	At least one result per sample is verified against the target quant sheets/raw data
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Dilution factor correctly calculated (sample load volume, syringe and bag dilutions, can pressurization(s))
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Correct amount of sample analyzed (i.e. sample not over-diluted)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Spectra verified - documentation of spectral defense included (Section 5A of eCVP pkg)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TICs resemble reference spectra
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	TICs between duplicate samples are consistent
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Checked samples for trends (i.e. Influent vs. Effluent, Field Dups, Field/Trip Blank, etc.)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Data for multiple analyses of sample(s) has been evaluated for comparability of results
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Special units for all samples in the final report are correctly calculated
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Manually entered results checked (i.e. TPH/NMOC)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Chain of Custody verified for any special comments (i.e. different compounds/RLs, action levels)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Chain of Custody scanned correctly
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Verify sample id's vs. chain of custody
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Date MDL(s) performed per instrument(s) _____
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Samples pressurized w/ appropriate gas (N <sub>2</sub> or He) <input type="checkbox"/> Other (i.e. Tedlar bag, cartridge, sorbent)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Final pressure consistent with canister size (6L vs. 1L)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Verify receipt pressures
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Verify canister ID #'s
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Final invoice amount correct (adjusted for TAT, Penalties, Re-issue Charges etc.)
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Client LUMEN report reviewed for accuracy and completeness
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Final PDF report reviewed for correctness

Notes: (to include: noting samples with QA/QC problems, Blanks with positive hits, narratives, etc.)

A/R:

Dup. 04A

M/Q:

A<sub>1</sub>/A<sub>2</sub>

(Analytical Review/Date)

R/T

(Reporting Review/Date)

M

(Management Review/Date)

Q

(QA Review/Date)

A<sub>1</sub>: [Signature]R: 6/12/29/09M: 6/14/31/09A<sub>2</sub>:

T:

Note (1): Please check all the appropriate boxes. Indicate "NA" for any statement that does not apply.

Rev. 11/17/09

Note (2): Management reviewer and reporting reviewer must be separate individuals.